










Date: Wednesday, 12/11/2008 8:52:28 AM  
 User: Julie Dawson

## Process Sheet

<b>Customer</b> : CU-DAR001 Dart Helicopters Services	<b>Drawing Name</b> : 212 X-TUBE ,LOW STANDARD AFT
<b>Job Number</b> : 43330	
<b>Estimate Number</b> : 13223	
<b>P.O. Number</b> :	<b>Part Number</b> : D212664207TRN
<b>This Issue</b> : 12/11/2008 <b>S.O. No.</b> :	<b>Drawing Number</b> : D212-664-247 REV A
<b>Prsht Rev.</b> : NC	<b>Project Number</b> : N/A
<b>First Issue</b> : / / <b>Type</b> : CROSSTUBES	<b>Drawing Revision</b> : A
<b>Previous Run</b> : 43050	<b>Material</b> :
<b>Written By</b> :	<b>Due Date</b> : 19/11/2008 <b>Qty:</b> 1 <b>Um:</b> Each
<b>Checked &amp; Approved By</b> : <u>JUD 08.11.12</u>	
<b>Comment</b> : Est Rev:A New Issue 08-03-06 DD verified by:ec Est Rev B 08.04.02 Removed polish EC verified DD	
<b>Additional Product</b>	
Job Number: 	
<b>Seq. #:</b>	<b>Machine Or Operation:</b>
<b>Description :</b>	
1.0	D6008132
	Crosstube extrusion
	
	
<b>Comment:</b> Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s) Pick: Qty Part number Description Batch 1 D6008-132 Crosstube <u>B32920</u> Check OD = 3.250"; ID = 2.375" <u>a.m 08.11.130</u>	
2.0	MORI SEIKI
	MORI SEIKI CNC LATHE LARGE
	
	
<b>Comment:</b> MORISEIKI 1-Fill tube with sand & install plugs DT8534 on both ends as per Folio FA706 2-Turn first side as per Folio FA706 3- File transition lines smooth. <u>a.m 08.11.130</u>	
3.0	QC1
	INSPECT ALL DIM TO DIM SHEET
	
	
<b>Comment:</b> INSPECT ALL DIM TO DIM SHEET <u>a.m 08.11.130</u>	
4.0	MORI SEIKI
	MORI SEIKI CNC LATHE LARGE
	
	
<b>Comment:</b> MORI SEIKI CNC LATHE LARGE 1-Turn second side as per Folio FA706 2- File transition lines smooth. 3-Remove sand and plugs <u>a.m 08.11.130</u>	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

Date: Wednesday, 12/11/2008 8:52:28 AM  
User: Julie Dawson

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 212 X-TUBE ,LOW STANDARD AFT

Job Number: 43330

Part Number: D212664207TRN

Job Number:



Seq. #:

Machine Or Operation:

Description :

5.0

QC1

INSPECT ALL DIM TO DIM SHEET



Comment: INSPECT ALL DIM TO DIM SHEET

a.m 08-11-13 (1)

6.0

QC8

SECOND CHECK



Comment: SECOND CHECK

Ann 8-11-14

7.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1

1 MB 8-11-17

8.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

D H 8-11-17

9.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Identify and stock in kanban rack

Location: L.G.

D H 8-11-17

10.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

08/11/18

Job Completion



mf 08-11-17

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

<b>DART AEROSPACE LTD</b>	<b>Work Order:</b> 43330
<b>Description:</b> Crosstube Assembly (205/212 Low Aft)	<b>Part Number:</b> D212-664-247
<b>Inspection Dwg:</b> D212-664-247 <b>Rev:</b> A	<b>Page 1 of 1</b>

### FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article
 ☐ Prototype

	Inspection Sheet Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	0.438	+/-0.010	0.438	✓			
	2.680	+0.005/-0.000	2.685	✓			
	2.680	+0.005/-0.000	2.684	✓			
	2.687	+0.005/-0.000	2.692	✓			
	2.802	+0.005/-0.000	2.807	✓			
	2.906	+0.005/-0.000	2.908	✓			
	3.009	+0.005/-0.000	3.014	✓			
	3.112	+0.005/-0.000	3.117	✓			
	3.250	+0.005/-0.000	3.250	✓			
SIDE B	0.438	+/-0.010	0.438	✓			
	2.680	+0.005/-0.000	2.685	✓			
	2.680	+0.005/-0.000	2.684	✓			
	2.687	+0.005/-0.000	2.692	✓			
	2.802	+0.005/-0.000	2.807	✓			
	2.906	+0.005/-0.000	2.908	✓			
	3.009	+0.005/-0.000	3.014	✓			
	3.112	+0.005/-0.000	3.117	✓			
	3.250	+0.005/-0.000	3.250	✓			
	128.27	+/-0.030	128.270	✓			

<b>Measured by:</b> A.M	<b>Audited by:</b> AVM	<b>Prototype Approval:</b> N/A
<b>Date:</b> 08.11.13	<b>Date:</b> 8-11-14	<b>Date:</b> N/A
<b>Rev</b> A	<b>Date</b> 08.11.07	<b>Change</b> New Issue (P/O D212-664-207)
	<b>Revised by</b> KJ/EC	<b>Approved</b>

**PARTS LIST:**

Qty	Part Number	Description
X	D212-664-247	CROSSTUBE ASSEMBLY (205/212 LOW AFT)
1	D6008-132	CROSSTUBE
2	D2940-1	SUPPORT
4	D3595-063-530	RUBBER CUSHION
2	D3660-1	CUFF
4	MS21920-28	CLAMP (OR MS21920-30)
44	CR3212-4-06	RIVET (OR M7885/3-4-06)
A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
A/R	SIKAFLEX-241/-291	SEALANT (OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT)

**GENERAL NOTES:**

- 1) MATERIAL: MANUFACTURED FROM D6008-132  
FINISHED LENGTH = 128.27±0.020 (BEFORE BENDING/TRIMMING)
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) ALL DIMENSIONS ARE IN INCHES
- 5) PART IS SYMMETRIC ABOUT CENTERLINE.
- 6) WHEN MACHINING TAPER, RUN-OFF PART AT STOCK. BLEND OUT EDGE LONGITUDINALLY,  
TRANSITION SHOULD BE SMOOTH.
- 7) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE  
TO BENDING IS 6% BASED ON O.D., EXCEPT UP TO 10% IS ALLOWED IN AREA NOTED.
- 8) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 9) SCRIBE DART PART NUMBER AND BATCH NUMBER ON INNER SURFACE OF TUBE WITH A  
VIBRATING STYLUS.
- 10) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE  
OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS  
SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT  
LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 11) APPLY A 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2940-1  
THAT WILL BE IN CONTACT WITH THE CROSSTUBE. LET CURE FOR 12 HOURS AFTER  
INSTALLATION AND PRIOR TO PACKAGING.
- 12) INSTALL MS21920-28 CLAMPS (OR -30) WITH D3595-063-530 RUBBER CUSHIONS TO SECURE  
D2940-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE  
CROSSTUBE SUPPORT.
- 13) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY  
AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.
- 14) INSTALL D3660-1 CUFF AFTER CHEMICAL CONVERSION COAT BUT BEFORE PAINT, WITH A  
LAYER OF SIKAFLEX-241/-291 OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT BETWEEN  
CUFF AND CROSSTUBE. SEAL EDGE OF CUFF TO ENSURE NO GAPS.
- 15) TOUCH-UP HOLES WITH CHEMICAL CONVERSION COAT.

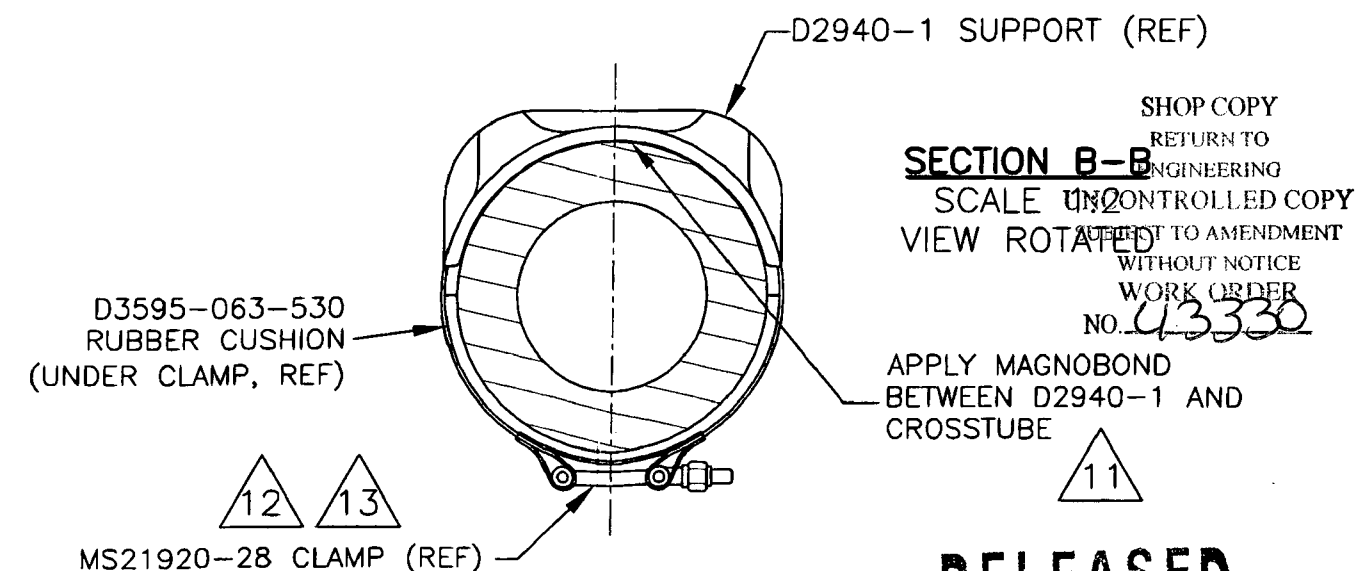
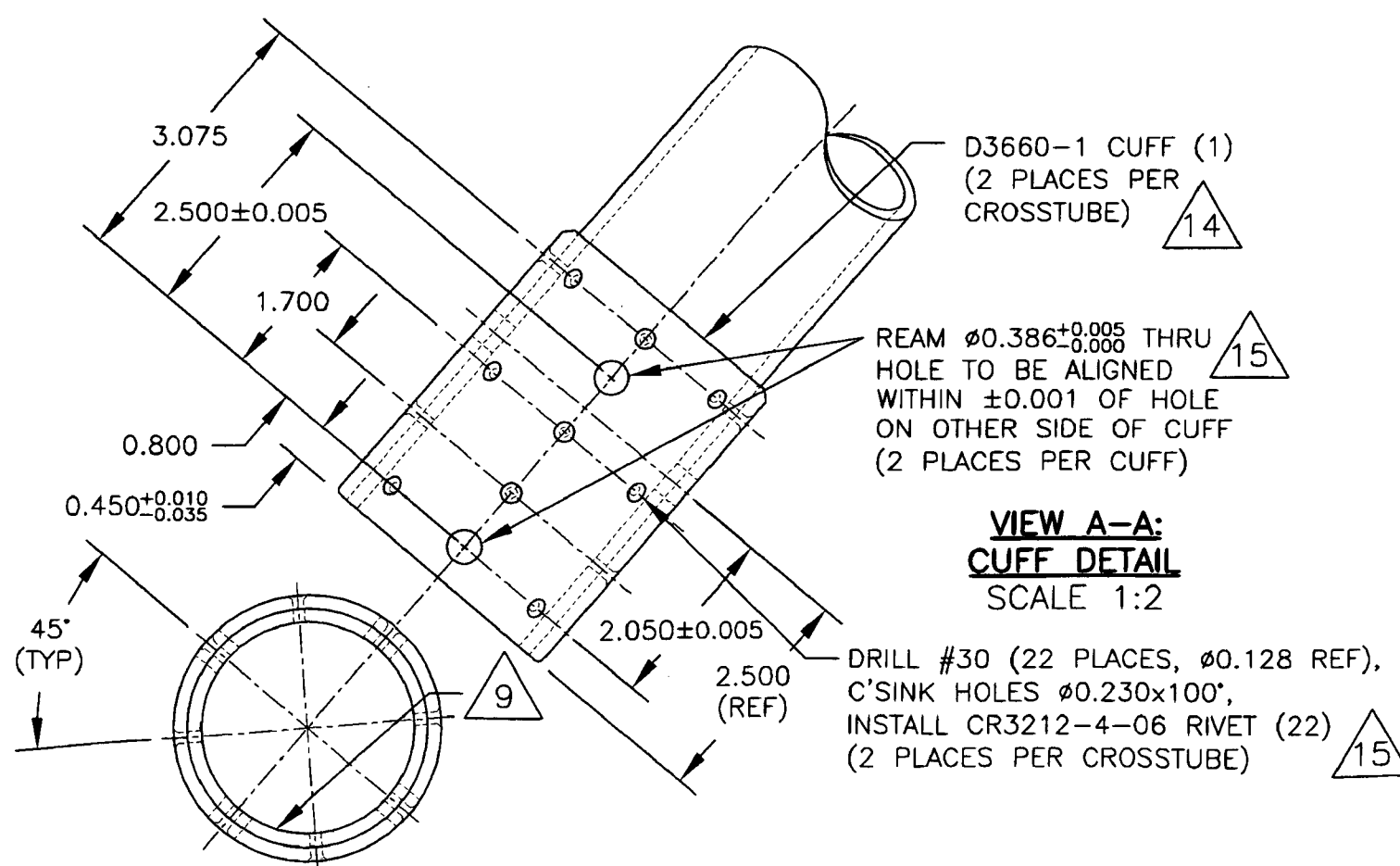
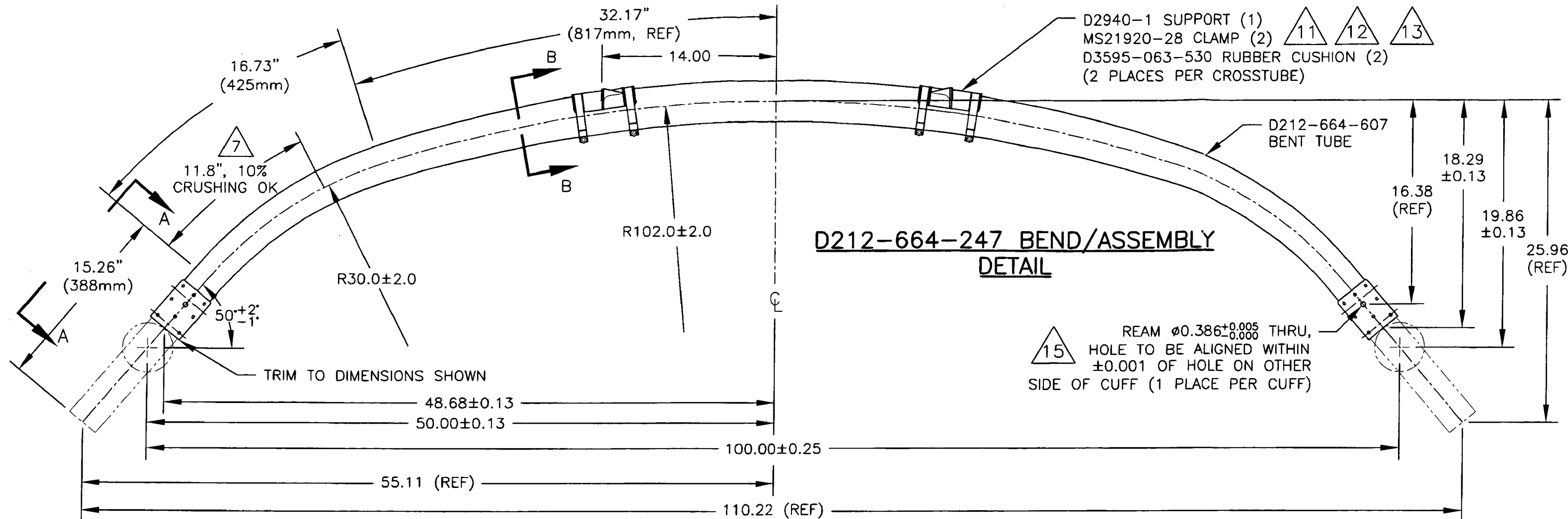
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DATE		DRAWING NO.	DART AEROSPACE LTD. HAWKESBURY, ONTARIO, CANADA
07.07.07		D212-664-247	REV. A.
		TITLE	SHEET 1 OF 3
		CROSSTUBE (205/212 LOW AFT)	SCALE
			NTS

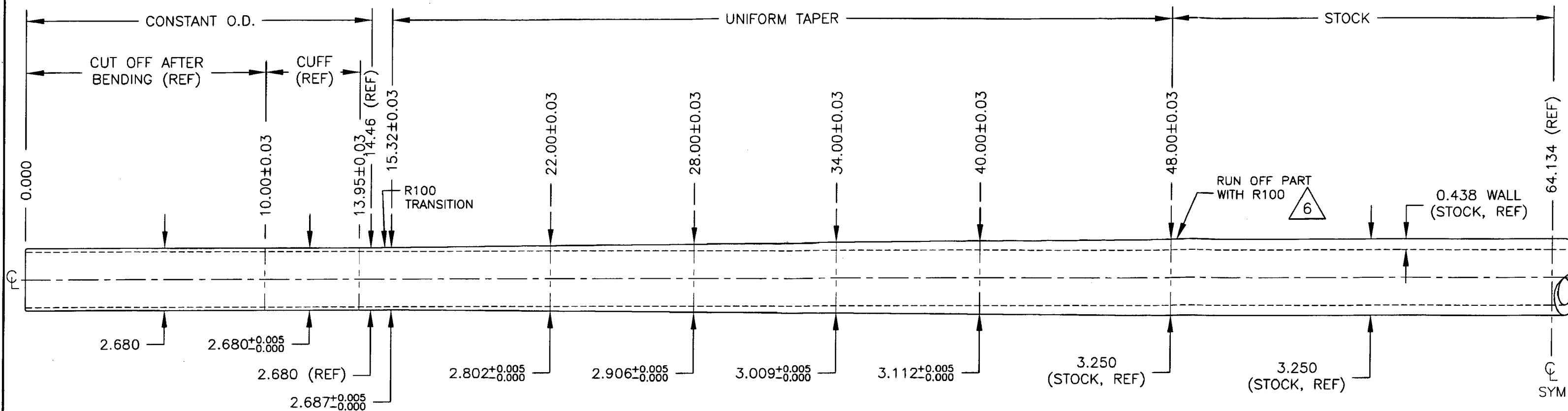
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		DATE	07.07.07	TITLE		D212-664-247	SHEET 2 OF 3
						CROSSTUBE (205/212 LOW AFT)	SCALE 1:8



# D212-664-247 MACHINING DETAIL

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				D212-664-247		SHEET 3 OF 3
				TITLE		SCALE
				CROSSTUBE (205/212 LOW AFT)		1:4



**PARTS LIST:**


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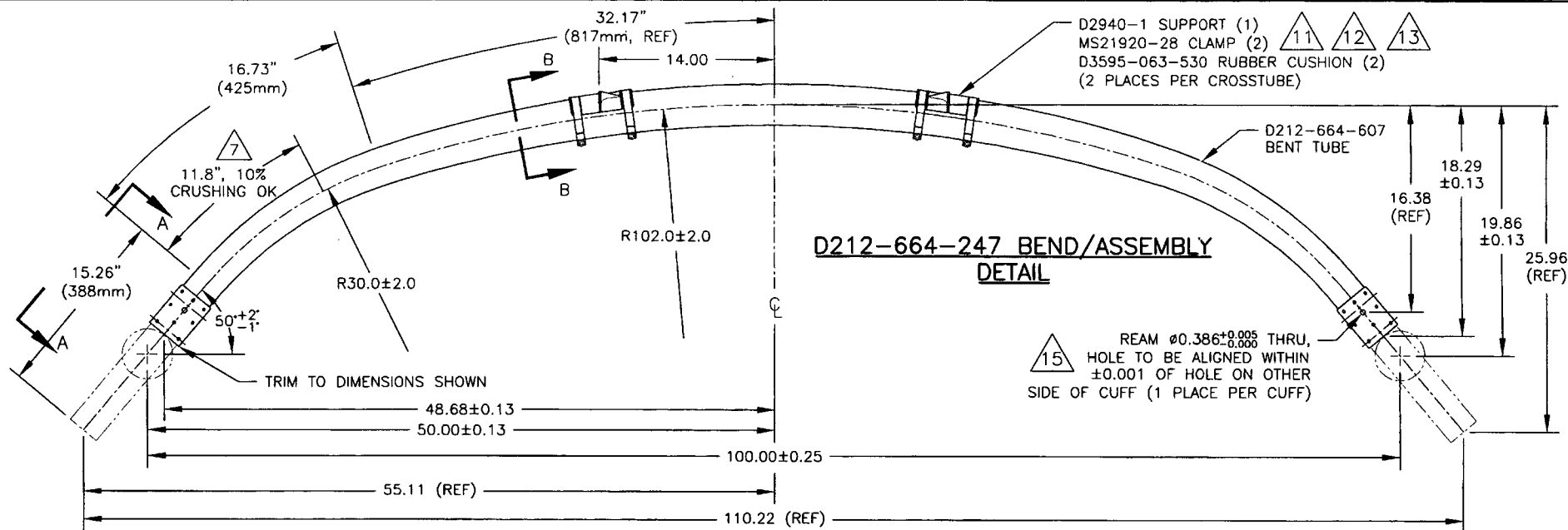
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- 11) APPLY A 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2940-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 12) INSTALL MS21920-28 CLAMPS (OR -30) WITH D3595-063-530 RUBBER CUSHIONS TO SECURE D2940-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE CROSSTUBE SUPPORT.
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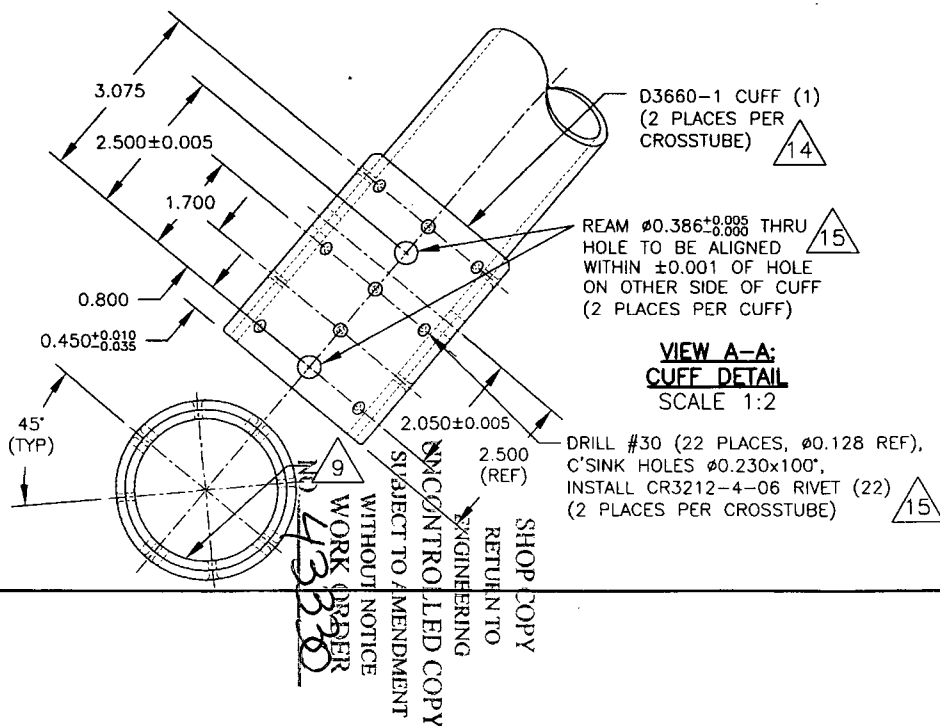
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CHECKED <i>pt</i>		APPROVED <i>pt</i>		
DATE 07.07.07		DRAWING NO. D212-664-247		REV. A SHEET 1 OF 3
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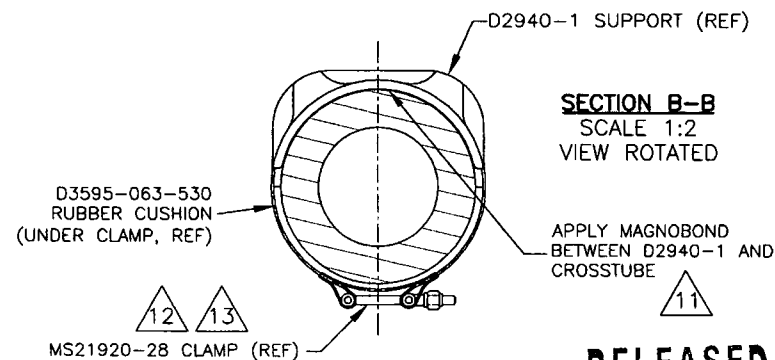


### D212-664-247 BEND/ASSEMBLY DETAIL

REAM  $\varnothing 0.386^{+0.005}_{-0.000}$  THRU,  
HOLE TO BE ALIGNED WITHIN  
 $\pm 0.001$  OF HOLE ON OTHER  
SIDE OF CUFF (1 PLACE PER CUFF)



### VIEW A-A: CUFF DETAIL SCALE 1:2



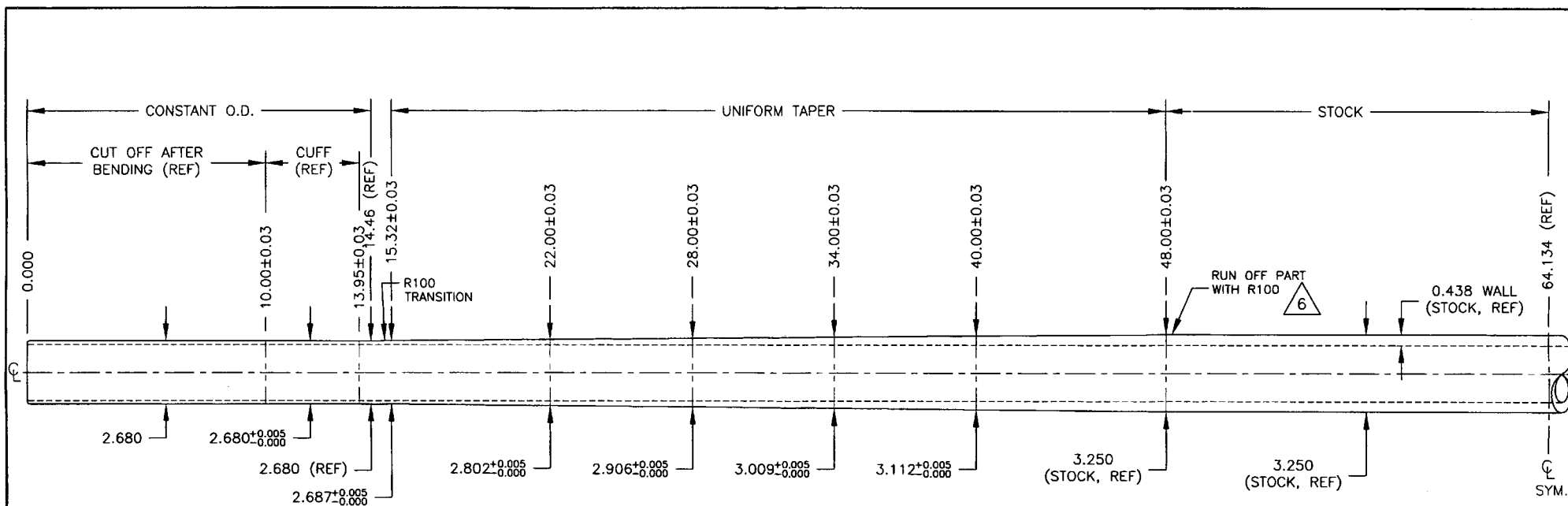
### SECTION B-B SCALE 1:2 VIEW ROTATED

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DATE 07.07.07	TITLE CROSSTUBE (205/212 LOW AFT)	SCALE 1:8	



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CHECKED 90	APPROVED 90	DRAWING NO. D212-664-247
DATE 07.07.07	TITLE CROSSTUBE (205/212 LOW AFT)	REV. A SHEET 3 OF 3 SCALE 1:4